PATENT SPECIFICATION

484,990

Application Date: Nov. 9, 1936. No. 30457/36.

Complete Specification Accepted: May 9, 1938.

COMPLETE SPECIFICATION

Improvements in Paper and like Cartons and the like

I, GEORGES LACOUR, 26 Rue Martinval, Levallois-Perret, Seine, France, a citizen of the French Republic, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to paper and like cartons and the like provided with a coating, such as paper cartons which were heretofore coated with paraffin or with latex mixed with wax or paraffin, and which are used to supply consumers of milk or other substances, whether of an alimentary nature or not.

The invention has for its primary object the construction of receptacles which are light, very strong and impermeable, and whose internal coating produces no chemical reaction with the contained substances; in particular, as concerns alimentary products, these will not contract any taste due to their contact with the receptacle.

The invention consists broadly in a paper or like carton or the like having a coating consisting of latex or rubber milk, natural or artificial, containing a tannic substance such as a tannic extract of a vegetable nature.

Fig. 1 of the accompanying drawings is a perspective view of a receptacle of one class to which the invention relates.

Figs. 2 and 3 relate to a modification.

Figs. 4 and 5 indicate the method of closing a receptacle as shown in Fig. 1.

Figs. 6 to 10 relate to other modifications.

In accordance with the invention, the light receptacle consisting of fibrous material such as paper is coated, at least internally, with a substance which solidifies and thus forms a covering film.

The coating contains, in the proper proportion, latex and at least one tannic substance, such as a tannic extract of a vegetable nature, such as tannin of a gallic or pyrogallic nature, e.g. catechu.

Any proportions can be employed according to the use which is to be made of the receptacle. For receptacles for liquids, such as milk, there is added to the latex in solution, preferably alkaline, a proportion of tannin, by weight, ranging from 0.005 to 0.05 or more.

The tannic substance may be in the form of an aqueous solution, this latter being then incorporated into the latex by mixing.

Fig. 1 shows a known form of receptacle, but it is possible, in order to simplify the manufacture, to utilize receptacles analogous to those shown in Figs. 2 and 3. The latter consists of several unit pieces which are assembled, for instance by external joints which are held together by any suitable means. In the construction herein represented, the pieces are three in number, and thus the joints will form, on the bottom, a three-armed spider which serves as a substantial base.

Referring to Figs. 4 and 5, the receptacle represented is provided, at least internally, with a layer of latex and tannin, which confers upon it the properties of rigidity, tightness to fluids, and strength. The receptacle is hermetically closed in a reliable and economical manner, by making contact between the two edge portions *a*, *b*, for instance by the use of the clamp *c*, the contact between the two coated surfaces providing for the sealing of the receptacle.

In the modification shown in Fig. 6, the upper edge portions *a* and *b* are curved as at *d* and interengaged.

In the device shown in Fig. 7, instead of using a clamp *c*, one edge portion *a* is held by a matrix *e* against which is applied a die *f*, and in this case a particularly strong adhesion is obtained.

Fig. 8 relates to a modification which provides, below the point where the two edges of the receptacle adhere together, a place adapted for opening the receptacle. This is obtained by inserting a paper strip at *h*. When the receptacle is cut at this place, it will be open at once. It is preferable that the strip should be coated with latex on one side.

Fig. 9 relates to another modification in which the receptacle is closed by a cover *i* which is coated in the same way as the receptacle. When the cover is

[*Price* 1/-]

placed in the mouth of the receptacle, this will afford tight closure of the receptacle.

In the case of Fig. 10 the cover *i* consists of a coated disc, which is placed flatwise upon the rolled edge of the receptacle.

If the material to be coated is partially transparent or translucent, the height of the liquid in the receptacle may be observed through the coating if the latter is itself translucent.

Paper may be treated, for instance with a composition containing natural or synthetic resin, in order to form windows.

Again, a window aperture or apertures can be punched in the blank during the manufacture. It is preferable in this case to mount a translucent band over the window aperture, in the interior of the receptacle.

It is also feasible to mount on the exterior of the receptacle a band of paraffined paper, or the like.

Preferably, the windows are placed on a common diameter.

In the present case, it is preferable to use the latex in solution. Before or after its use, it may be subjected to any suitable treatment, whether physical or chemical, in order to confer upon the resulting layers the properties of mechanical strength, chemical resistance, impermeability, adhesion, and an elasticity adapted to the liquid to be contained in the receptacle. The treatments to which the latex complex is subjected may be applied separately or in combination.

In certain cases, the coating of latex and tannic extract may be covered by a protecting and insulating coating, applied hot or cold, (for instance, of paraffin wax, cellulose derivative or other varnish).

A preferred method of producing the coating material is as follows:—

1. Make an emulsion of paraffin, using gum arabic as an emulsifier, preferably at a temperature close to the melting point of paraffin wax, and, as far as possible, with rapid cooling after the formation of the emulsion. The best proportions by weight are as follows: paraffin wax 42, and gum arabic 56 in solution of a strength between 15 and 35%. A few grammes of ammonia may be added at will.

2. Prepare an aqueous solution of gum tragacanth of a strength of 2 or 3%.

3. Mix the emulsion (1) and the solution (2) in practically equal proportions.

4. Mix the product (3) with latex containing tannin, as above mentioned; then add latex in order to obtain a percentage of paraffin, by weight, of 2 to 10% with reference to the dry latex, with a percentage of tannin varying from a few tenthousandths to a few thousandths.

The resulting coating will form a covering film on the paper the pores of which are closed by the particles of paraffin embedded in the mass. By using a rather small proportion of paraffin the adhesion of the coating is still maintained, and this permits the use of the simple closing means described with reference to Figs. 4 and 5, although the impermeability of the receptacle to volatile substances is much increased.

This increase in impermeability can also be obtained by insulating the material of the wall of the receptacle between two or more protecting layers, which will not penetrate or will only slightly penetrate into the material forming the wall of the receptacle.

The inner layer consists of latex and tannic extract, and the outer layer consists of a similar mixture or of paraffin wax or other substance, which will preferably have different characteristics from those of the inner layer.

Tests have been carried out for the preservation and handling of vinegar in paper bottles which are covered in the interior with a film of latex and tannic extract and on the exterior with a layer of paraffin wax.

Although latex is not attacked by the vinegar, when latex is employed alone, it will allow passage of vapours of acetic acid. The same is true for paraffin employed alone, even if there is a paraffin coating inside and outside. But cartons which are coated as above mentioned according to the invention are impermeable not only to vinegar, but also to the vapours of acetic acid.

Another advantage afforded by the use of the invention for receptacles for liquids and the like (such as cartons for preserved food) consists in the possibility, since the two coatings may have different characteristics, of using a single type of receptacle or a limited number of types, for liquids or other substances of very different nature.

Obviously, the layers of the coating may be formed in any suitable manner, and at any time; the external layers may be produced before, during or after the formation of the internal layer on the already manufactured receptacle, but preferably after the receptacle has been closed, by the immersion of the entire receptacle, when filled and closed, in a suitable bath.

It has previously been proposed to stabilize latex by forming in the latex a

metallic salt of tannic acid, e.g., ferrous tannate or calcium tannate, the stabilized latex being useful as an adhesive, e.g., in the manufacture of boots and shoes. Protecting precipitate may be formed by adding tannic acid and ferrous sulphate or tannic acid and calcium hydroxide to latex. Again, it has been proposed to coat vulcanised surfaces with a composition including an uncoagulated aqueous rubber dispersion and proteins, such as casein, albumen and glue, and a reagent such as tannic acid capable of insolubilising the proteinous material.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A paper or like carton or the like having a coating consisting of latex or rubber milk, natural or artificial, containing a tannic substance such as a tannic extract of a vegetable nature.

2. A carton or the like having a coating of latex and tannin as claimed in claim 1, in which the mixture of latex and tannic substance contains an emulsion of paraffin in gum arabic and gum tragacanth.

3. A carton or the like as claimed in claim 1 having a coating prepared by the following steps:

a) Prepare an emulsion of paraffin wax with an emulsifier consisting of gum arabic, at a temperature close to the melting point of the paraffin;

b) Prepare a solution of gum tragacanth in water;

c) Mix the emulsion (a) with the solution (b);

d) Mix the mixture (c) with latex containing tannin.

4. A carton or the like provided with a coating as claimed in claims 1 or 2, characterised in that its closure is effected by simply bringing together the edges of coated faces which are sealed by the adhesion of the coating material.

5. A carton or the like as claimed in claim 4, further characterised in that a paper strip is interposed between a portion of the coated edges.

6. A carton as claimed in any of claims 1, 2, 4 or 5, characterised in that its wall which receives the coating is formed with window apertures.

Dated the 7th day of November, 1936.

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Agents for the Applicant.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1938.

Fig.1

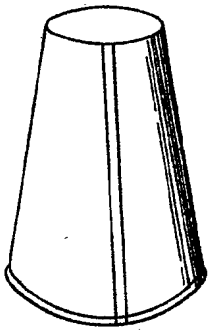


Fig.2

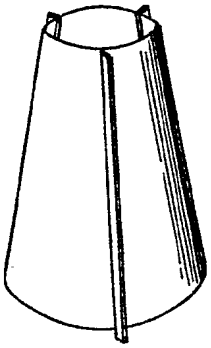


Fig.3

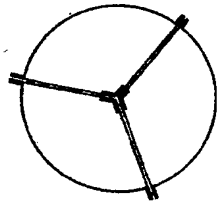


Fig.4

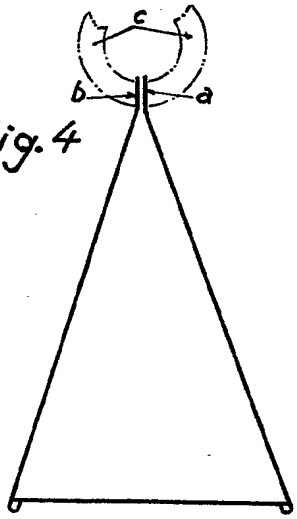


Fig.5

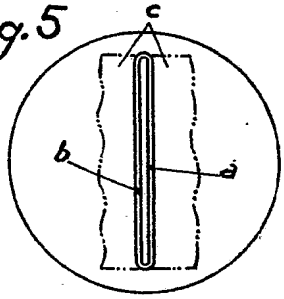


Fig.6

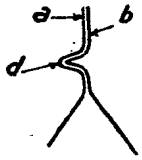


Fig.7

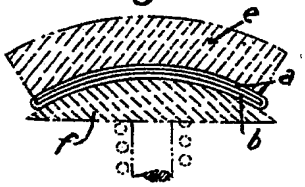


Fig.8

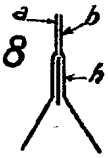


Fig.9

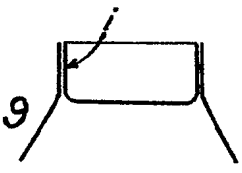
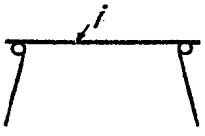


Fig.10



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